

NORTH CENTRAL REGIONAL PLANT INTRODUCTION STATION
NC-7 PROGRESS REPORT, SEPTEMBER 1980

(Supplement to NC-7 Annual Report, Jan. 1 - Dec. 31, 1979)

1. PROJECT: NC-7 "New Plants" - The Introduction, Multiplication, Preservation and Evaluation of New Plants for Industrial and Agricultural Utilization.

2. COOPERATING AGENCIES AND PRINCIPAL LEADERS:

State Experiment Stations

Alaska
Illinois
Indiana
Iowa
Kansas
Michigan
Minnesota
Missouri
Nebraska
North Dakota
Ohio
South Dakota
Wisconsin

Representatives

R. L. Taylor
T. Hymowitz

I. T. Carlson, Chairman
C. E. Wassom
R. L. Andersen
H. Pellett
L. E. Cavanah
J. H. Williams
J. S. Quick
S. Z. Berry
R. M. Peterson
W. H. Gabelman

Administrative Adviser

R. W. Hougas

U. S. Department of Agriculture
Science and Education Administration

National Program Staff
Germplasm Resources Laboratory
Principal Plant Introduction Officer
Cooperative Research
Soil Conservation Service

Q. Jones
H. E. Waterworth
G. A. White
C. O. Grogan
A. G. Davis
W. C. Sharp
L. H. Princen

Northern Regional Research Center

North Central Regional Plant Introduction
Station, Ames, Iowa

Regional Coordinator
Horticulturist
Research Plant Pathologist
Research Entomologist

W. H. Skrdla
H. S. Bhella
R. L. Clark
R. L. Wilson

3. PROGRESS OF WORK AND PRINCIPAL ACCOMPLISHMENTS:

- a. This report is a supplement to the 1978 Annual Report dated January 1, 1980.
- b. The 1980 growing season is the thirty-third since the establishment of the Regional Station in 1948. The past winter was quite mild with very little snow. The spring was drouthy but sufficient rain fell to start the crops in good condition. Then, it turned dry and little or no rain fell until in mid-August. We had to start irrigating to keep the plants alive. Ames was especially dry, as was a strip through Central Iowa. The heavy rains and severe storms, including wind and hail in June did much damage to Iowa crops. The farmers said that more ice fell on Iowa in June than during the entire winter.

Hail damaged the Plant Introduction greenhouses, both at the farm and on campus. We lost over 100 panes of glass in the farm greenhouse and over 500 in the four campus greenhouses.

c. Capital Improvements

- 1) Construction of the office, laboratory, and seed processing building was started in October 1979 and is now (September 1980) virtually completed. Only minor details remain.

This building is 60' x 220' in size, with the south one-third devoted to office and laboratory space and the north two-thirds to seed cleaning and processing. This includes driers, storage of dried plant material, threshing room, seed cleaning room, research room-germinators, growth chambers, sterilizer, etc.--wet seed cleaning room, photography and herbarium specimen room, receiving room, and others. This building will be of great assistance to us and provide badly needed space and replacement of outmoded facilities. It is an energy-efficient building, heavily insulated and few windows.

- 2) An additional 50 cages were built and 50 additional bee hives for them. This makes a total of 150 cages in which cucumbers, parsley, carrots, and other vegetable crops are grown. Our plans are to extend their use to other crops, like sunflowers.

d. Cooperative Agreement seed increases

USDA funds are available for increasing original seed of alfalfa introductions under cages to prevent outcrossing. The work is being done at the University of Nevada at Reno in cooperation with Dr. B. D. Thyr. The work is being done through Cooperative Agreement with the University. Increase seed will be returned to Ames for distribution and making plantings to obtain descriptions of the accessions for seed catalogue purposes.

I visited the plots in August and found them to be very interesting. Most had a very good seed set and some interesting traits were being found. For example, a very large, vigorous accession was found to be a deploid.

Another Cooperative Agreement was developed with South Dakota State University for increasing seed of a native grass collection for deposit at the National Seed Storage Laboratory. About one-third of the proposed work was completed in 1979-1980.

e. GRIP Crop Advisory Committee Meetings

- 1) The second meeting of the GRIP Alfalfa Advisory Committee Meeting was held in Ames, Iowa in October 1979. A further refinement of descriptors and descriptor definitions started in 1978 was developed.

Time was also spent on discussing needs for plant explorations and development of exploration proposals. A proposal for collecting alfalfa in Peru, Bolivia, and Ecuador was funded in FY 1980.

- 2) The third meeting of the GRIP Tomato Advisory Committee was held in February 1980 at Culiacan, Mexico in connection with a meeting of the Tomato Breeders Roundtable. The evaluation proposal, previously prepared, was discussed in view of comments made by reviewers and various committees. The primary thrust was to attempt to lower the cost and to obtain more user input with regard to performing the evaluations.

A proposal to the Tomato Breeders Roundtable requesting them to sponsor the GRIP Committee was accepted.

g. Activities involving the Coordinator and staff

- 1) As mentioned above, the 1980 meeting of the Tomato Breeders Roundtable was held in Culiacan, Mexico during February. Clark and Skrdla attended this meeting, as well as the GRIP Meeting because both are members. This included a field trip to the winter vegetable producing area of Mexico and tomato processing plants.

After the meeting, a visit was made to CIMMYT near Mexico City to become better acquainted with the corn program and corn collection.

- 2) Clark attended the Meeting of the Interregional Corn Committee in Atlanta in February. In cooperation with staff from LISA, he assisted with a demonstration of the use of a computer terminal in the Atlanta meeting room, in querrying our corn data bank here at Ames.
- 3) In May 1980, Skrdla attended a meeting in Bulgaria, as a member of an FAO Consultative Committee for establishing an Institute of Plant Introduction and Plant Genetic Resources in Sadovo, Plovdiv, Bulgaria. He attended a Tripartite Meeting of the UNDP and then made a consultative review of the program developments. Enroute back, he stopped at the University of Birmingham, England to visit Professor J. G. Hawkes and staff. Professor Hawkes is the senior consultant to this committee, Head of the Department of Biology, and also a plant explorer and potato specialist.
- 4) In August, Clark attended a Cucurbitaceae Meeting in Geneva, New York. Many of the cucurbits collected by Clark and Winters in Mexico were being grown for this meeting.
- 5) In August, Skrdla attended a meeting of the NC-83 Meeting in Davis, California and then proceeded to Reno, Nevada to visit the Alfalfa increase plots and meet with USDA and University staff involved with making the increases.

- 6) In August, Bhella attended the ASHS Meeting in Fort Collins, Colorado. He also made trips to various NC-7 ornamental sites in the Region.
- 7) In September, Wilson visited the USDA Grain Insects Laboratory at Brookings, South Dakota.

h. Plant Exploration

A trip to Peru, Bolivia, and Ecuador by W. R. Kehr, Nebraska, and M. D. Rumbaugh, Utah for the purpose of collecting alfalfa was cancelled because of the political situation in this election year. It was learned that their safety could not be promised. In lieu of that trip a collecting trip to Chile by Kehr was completed in partial fulfillment of the original plans.

Also, a two-part domestic exploration trip for collecting alfalfa in Central and Western U.S. and Southern Canada was substituted as a partial fulfillment for the original trip. M. D. Rumbaugh collected in the western states and part of Canada and A. C. Wilton collected in the central states and part of Canada. Many of the collections represent clones tracing back to the N. E. Hanson introductions from USSR around 1900. Rhizobia collections were also made.

i. Personnel

- 1) Dr. Richard L. Wilson has replaced Dr. J. L. Jarvis as Research Entomologist at the Regional Station. Wilson reported in on August 1. He has been in host-plant resistance work since 1971 when he finished his degree at ISU. His graduate work involved screening the PI corn collection for resistance to corn rootworm.
- 2) Charles Block replaced Marion Ellis as Research Associate in Plant Pathology. Charles received his M. Science degree in Plant Pathology at Iowa State University.
- 3) Virginia Collison replaced Ramona Satre in August 1979. Virginia has a B. Science degree in ~~Agronomy~~ *Horticulture* from the University of Maryland.
- 4) Robin Nosti replaced Greg Jackson in January 1980. Robin has a B. Science degree in ~~Agronomy~~ *Horticulture* from Colorado State University.
- 5) Mark Millard replaced Joyce Hornstein in July 1980. Mark has a B. Science degree in ~~Agronomy~~ and has done graduate work in plant breeding at ISU. He has met most of the requirements, except for completing some research, towards the M. Science degree.

j. Financial Statement - FY 1980

The following is the Regional Station budget for the current fiscal year 1979-80.

BUDGETS

<u>STATE FUNDS</u>		<u>FY 1979-80</u>	
<u>Regional Research Funds</u>		<u>Requested</u>	<u>Received</u>
Salaries		\$104,600	\$104,600
Operating expenses			
Temporary labor		16,000	2,500
Miscellaneous (Utilities, supplies, equipment, Research support, etc.)		41,600	27,550
TOTAL RRF		\$162,200	\$134,650
<u>IOWA STATE UNIVERSITY</u>			
Salaries, current expense			\$25,000
Indirect costs for facilities and equipment, (land, buildings, and certain utilities)			24,000
TOTAL ISU			\$49,000
<u>USDA-SEA-AR</u>		<u>1978-79</u>	<u>1979-80</u>
Salaries		\$110,900	\$117,600
Operations		109,711	120,400
TOTAL, USDA		\$220,611	\$238,000
<u>Operations</u>			
Cooperative Agreement			
Alfalfa seed increase		\$ 40,000	\$ 40,000
Native grass increase		10,000	10,000
Plant Exploration		5,500	10,000
Travel		4,340	7,400
Supplies, Labor, etc.			
Moving expenses (Entomol.)		-	10,000
T. A. Travel		-	900
Equipment		6,500	3,000
Miscellaneous		-	4,100
TOTAL, Operations		\$ 78,500	1/ \$120,400
Equipment Allotment		31,211	
TOTAL, Operations		\$109,711	
TOTAL, ALL SOURCES			\$421,650

1/ In addition, we are authorized to use up to \$20,000 directly from the Communications Data and Service Division, CDSO, budget through our Area Office for GRIP Computer-expenses only. This is in support of the GRIP Program.

k. Plant Pathology Program

1) Disease Screening:

- a) Starting with 47 lines from previous years' tests and continuing on through PI 415281, a total of 137 lines were evaluated for Diploida stalk rot reaction. The best two PI lines (194384 and 227937) averaged a disease rating score of 2 over 6 reps of 10 plants each, whereas the resistant check (H533 B) rated 1, on a 0-9 scale, where 9 - very severe stalk rot, 0 - no infection.

In addition, the following six lines all averaged 3: 186223, 270290, 311235, 311237, 414179, and 415231. The moderately resistant check, AES 704, rated 4.

- b) These same corn lines were evaluated for resistance to common corn rust (P. sorghi) and five of them (194384, 221817, 221820, 318728, and 415281) rated less than 0.5 on a 0-5 scale, where 0 - no infection, 5 - very severe infection. The moderately resistant checks (AES 704 and H 533B) rated 1.2 and 1.7, respectively.

The resistance of the above five PI lines is of the polygenic, mature plant resistance, wherein the number of rust pustules is greatly reduced, but those that do occur are erumpent.

- c) Another 300 tomato lines were evaluated for soil rot (Rhizoctonia solani) in inoculated sand benches. This year eighteen showed signs of having some fruit rot resistance: 357238, 368169, 368690, 390509, 390511, 390716, 391609, 391614, 391616, 401768, 406751, 406759, 406768, 406776, 406777, 406801, 406804, and 406813. These lines will be tested again this year. The PI line 193407 still exhibits segregation for resistance, but PI 294449, from Brazil, did not look good in the 1979 tests.
- d) Screening for Septoria leaf resistance in tomato was initiated last fall but most of the winter was taken up by technique development, both from the standpoint of inoculum production and inoculation methods.
- e) The alfalfa collection will be screened for northern root knot nematode resistance as our nematode colony permits this winter. Summer temperatures in our greenhouse consistently go above the 92° mark--a temperature above which the nematodes do not complete their life cycle.

2) Disease control

- a) Downy mildew is still being eliminated from our sunflower seed increase plots by examining the seedlings and rouging and destroying infected plants. One seedling was found this year.
- b) The Cucurbita and Cucumis seedlings are still being examined for symptoms of Squash Mosaic Virus infection in the greenhouse before transplanting to the field. Infected plants are destroyed.

- c) Cit-cop sprays have been used this year on the tomato seed increase plantings to control leafspots. Sprays are being put on at 7-10 day intervals.

3) Other activities

- a) The corn disease summary has been revised and is in the final draft form. It should be ready for distribution early this fall.
- b) A cooperative study on corn has been instigated with the entomologists at the U.S. Corn Borer Lab in Ankeny. We are attempting to establish the relationship between corn borer feeding resistance and stalk rot resistance. The data from 1979 indicate that corn borer resistance is more important in lowering stalk rot infection than stalk rot resistance is. The experiment is being repeated this year.
- c) The GRIP tomato and alfalfa committees continue to make progress toward an integrated computerized data system compatible with other national and international systems and data banks. Currently we are working on setting up the prototype of the registry and maintenance portion of the system. When completed, the computer will log in all incoming seed from the PI Office in Beltsville so that our personnel do not have to retype any of the registry information. The computer will then add these new items to our inventory so that anyone throughout the National Germplasm System can get an up-to-date listing of all accessions held at NC-7.

The maintenance portion of the system will contain germination and supply data on all accessions in our storage rooms so that, under our direction, it will print out the lists of the various crops showing which lines need to be grown for increase. We are already using the computer to print our field books. It will also be used, eventually, to print out our yearly plot plans.

The maintenance portion of the system will be continuously updated so that we will always know how much seed is on hand of each accession. When seed requests come in, the computer will make up the seed packets and shipping labels and update the seed supply data as the seed order is filled.

1. Entomology program

Because of the turnover in entomologists this year, there will be no detailed report at this time.

m. Ornamental program

- 1) In cooperation with the NC-7 Ornamental Subcommittee, 944 ornamental plants of 10 introductions were sent on request to the NC-7 Regional Trial Cooperators and Arboreta, Botanic Gardens, and Parks Cooperators in the North Central Region. Ornamental plant introductions sent on NC-7 Regional Trial included Betula

Maximowicziana (PI 420323-420327), Betula nana (PI 414758), Fraxinus excelsior (PI 385251), Genista multibracteata, Picea Omorika (PI 399396), Pyrus communis (PI 418783), Rhus lancea (PI 419221), Syringa pekinensis, Taxus baccata (PI 399411, 399412), and Thuja occidentalis.

- a) NC Regional Trial Cooperators. A total of 720 plants were distributed to the Regional Trial Cooperators for planting at 29 trial sites. All the 13 states in the NC Region participated in the ornamental program. In addition, 20 plants were sent to the University of Maine, 10 to the NE Regional Plant Introduction Station, and 23 to the University of Kentucky.
 - b) NC Arboreta Cooperators. 178 plants of 5 introductions [Betula Maximowicziana (PI 420323-420327), Fraxinus excelsior (PI 420323-420327), Genista multibracteata, Rhus lancea (PI 419221), and Taxus baccata (PI's 399411, 399412)] were sent on request to the 13 Arboreta, Botanic Gardens, and Parks cooperators in the NC Region.
 - c) Miscellaneous Distribution. Twenty-seven plants of 7 Ulmus species and hybrids (PI 310432, 313551, 313981, 313982, 313938, 313984, and 341756) were rooted from cuttings for Northern Great Plains Research Center. In addition, 5 plants were sent on request to a cooperator in Ohio, 3 in South Carolina, and 11 in California.
- 2) More than 2000 ornamental plants were propagated and raised at the Regional Station. It is expected that more than 1500 ornamental plants of 15 introductions will be distributed in 1980. The Distribution List includes Acer Ginnala 'Flame', Betula fontinalis, Chamaecyparis Lawsoniana 'Triomf Van Boskoop' (PI 414760), Clematis orientalis, Crataegus punctata 'Ohio Pioneer', Genista tinctoria 'Golden Dwarf', Ilex opaca 'Secrest', Juniperus horizontalis 'Wisconsin', Physocarpus opulifolius 'Darts Golden', Salix repens 'Golden Dwarf', Thuja occidentalis 'Hoseri', Viburnum lantana 'Mohican' (PI 316679), V. x rhytidophylloides 'Alleghany' (PI 316675), and V. sargentii 'Onondaga' (PI 316680).
 - 3) A few of the 1979 contributions made by plant introductions, as reported by the users are listed as follows:

-Ornamentals

- a) Crabapple cultivar 'Jackii', PI 54083, has been reported to be resistant to scab, fire blight and blotch. This flowering crabapple provides a year round display of excellent foliage, flowers, and fruits, and is highly recommended for landscape use in the North Central Region except Alaska.
- b) PI 349629 (2n - 16), and 354252, 354254, and 354259 (2n - 32), Impatiens introduced from New Guinea in 1970 by Harold Winters of the USDA-SEA-AR, were used in the parentage of the new Impatiens cv. 'Blue Moon' developed and released by the Iowa State University.

- c) PI 354254 ($2n = 32$), Impatiens introduced from New Guinea, was among the parents used in the 'Tropical Sunset' Impatiens cv. developed and released by the Iowa State University.
- d) PI 349629 ($2n = 16$) and 354257 ($2n = 32$), Impatiens introduced from New Guinea in 1970, were used in the parentage of the Impatiens cv 'Burgundy' developed and introduced by the Iowa State University.
- e) PI 371894, Dianthus plumarius introduced from Siberia, has been released as Dianthus cv. 'Snow King' by the Nebraska Agricultural Experiment Station.

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- 4. USEFULNESS OF FINDINGS: (See 1979 Annual Report for the Regional Station prepared in January 1980)
 - 5. WORK PLANNED FOR NEXT YEAR: (See 1979 Annual Report for the Regional Station prepared in January 1980)
 - 6. PUBLICATIONS ISSUED OR MANUSCRIPTS PREPARED DURING THE YEAR: (See 1979 Annual Report for the Regional Station prepared in January 1980)

Table I. Seed packets distributed by the Regional Plant Introduction Station to cooperating states of the North Central Region, Northeastern, Western, Southern Regions, Foreign, Beltsville, and Fort Collins, January 1, 1979 - December 31, 1979.

Field Crops and Grasses		AK	IA	IL	IN	KS	MI	MN	MO	ND	NE	OH	SD	WI	NE9	W6	S9	FOR	BLTS	CLNS	FT	TOTAL
at Ames																						
Field																						
1980																						
35	Aegilops														6	27						33
	Agropyron							27														27
15	Agrostis	5	1				4													11		21
1	Alopecurus																					
	Amaranthus														2							2
	Apera																					
1	Arcatagrostis																					
	Arrhenatherum																					
	Avena																					
	Boissiera																					
	Bouteloua																					
1	Brachypodium										49	1										
98	Bromus	35	32				4								19	88		88	80	4		312 10
	Calarogrostis																					
	Cynosurus																					5
3	Dactylis		5																			
	Danthonia																					
	Deschampsia																					
1	Echinochloa														2							2
	Elymus																					
	Enneapogon																					
	Eremopoa																					
	Eremopyrum																					
	Eriachne																					
	Festuca																					
	Gaudiniopsis												1									1
5	Glyceria																					
2	Helictotrichon																					
	Heteranthellium																					
	Hordeum																					
	Koeleria													2								2
	Lasiagrostis																					
	Lolium																					
	Melica																					
2	Nardus																					

Field Crops and Grasses

[illegible]

Table I. (Continued)

Legumes at Ames Field 1979	NORTH CENTRAL REGION													FT						
	AK	IA	IL	IN	KS	MI	MN	MO	ND	NE	OH	SD	WI	NE9	W6	S9	FOR	BLTS	CLNS	TOTAL
Glycine		6	11																	17
Clycyrrhiza																				
80 Lathyrus	1													1	1		31		3	37
Lespedeza	9																			9
Lotus																				
209 Medicago	62				9					140	1		223	44	77	1035	485	16	27	2119
NC 83-1																				
NC 83-2																				
68 Melilotus	15														1	1	72		5	94
Onobrychis															1					1
Ononis																				
Petalostemma																				
Psoralea																				
Scorpiurus																				
Securigera																				
7 Tetragonolobus																				
Tephrosia																				
Trifolium																				
33 Trigonella																			1	1
Vicia																				
Miscellaneous	114	8	11	-	-	9	-	-	-	140	1	-	223	45	80	1037	589	16	36	2309
Total, NC Region - 506																				
Fruits and Vegetables																				
Allium																				
Apium															2					2
Asparagus																				
Atriplex																				
13 Beta															54					220
Chichorium																				
Citrullus																				
6 Cucumis							7						2		10	965	12	1	1	998
64 Cucurbita							35								190	8	6			239
98 Daucus							10								1		68			181
Perula													102							

Table I. (Continued)

Fruits and Vegetables		NORTH CENTRAL REGION												FT							
at Ames	1980	AK	IA	IL	IN	KS	MI	MN	MO	ND	NE	OH	SD	WI	NE9	W6	S9	FOR	BLTS	CLNS	TOTAL
Fragaria																					
Lactuca																					
317 Lycopersicon		94	6	192			3	1	55		201			15	170	109	372	1027	64	42	2352
Ocimum																					
6 Origanum																					
5 Pastinaca																					
Petroselinum																					
Phaseolus																					
Pisum																					
69 Raphanus															21					112	133
Rheum																					
Ribes																					
Rubus																					
Sium																					
Solanum					1													4			
57 Spinacia															29	40				14	5
Vaccinium																					83
Raphanobrassica																					
Miscellaneous																					
TOTAL		-	94	6	193	-	3	54	55	166	-	201	-	119	199	427	1345	1117	65	169	4213
Total, NC Region - 894																					
Oil and Special Crops																					
Adonis																					
Alliaria																					
Allysum															1						1
7 Amaranthus																					
Ammi																					
Anethum															11						11
Aretium																					
Atroctylis																					
Besella																					
Berteroa																					
Bifora																					
Biscutella																					
307 Brassica													11		8	28	21	364		3	435
Briza																					

Table I. (Continued)

Oil and Special Crops at Ames 1980	NORTH CENTRAL REGION										FT									
	AK	IA	IL	IN	KS	MI	MN	MO	ND	NE	OH	SD	WI	NE9	W6	S9	FOR	BLTS	CLNS	TOTAL
Buddleia																				
Bupleurm																				
Calamintha																				
Calamintha																				
Calendula																				
Caltha																				
Camelina																				
Cadamine																				
Cassia																				
Catananche																				
Caucalis																				
Centranthus																				
Cephalaria																				
Chamaepeuce																				
Chenopodium																				
Christolea																				
Cichorium																				
Cnicus																				
Crambe																				
Crepis																				
Crotalaria																				
Cyamopsis																				
Cynara																				
Cynoglossum																				
Dimorphothera																				
Ducrosia																				
Echinacea																				
Echinops																				
Echium																				
Enarthrocarpus																				
Eruca																				
Eryngium																				
Euphorbia																				
Foeniculum																				
Glaucium																				
Goldbachia																				
Guizotia																				
Helenium																				

Oil and Special Crops

[illegible]

Table I. (Continued)

Oil and Special Crops at Ames 1980	NORTH CENTRAL REGION													FT						
	AK	IA	IL	IN	KS	MI	MN	MO	ND	NE	OH	SD	WI	NE9	W6	S9	FOR	BLTS	CLNS	TOTAL
stenachaenium	-	-	-	-	-	-	585	-	6	-	-	11	-	9	727	63	1199	-	116	2716
Stokesia																				
Symphytum																				
Tephrosia																				
Thalictrum																				
Thlaspi																				
Trachyspermum																				
Vaccaria																				
Vernonia																				
Undetermined																				
TOTAL	-	-	-	-	-	-	585	-	6	-	-	11	-	9	727	63	1199	-	116	2716
Total, NC Region - 602																				
TOTAL DISTRIBUTION 13,043																				

Table II. Distribution of Ornamental Plants, Spring 1979.

I. NC Regional Trial Cooperators

Number of Sites State	AK	IL	IN	IA	KS	MI	MN	MO	NE	ND	OH	SD	WI	NCR	NE-9 S-9 W-6 TOTAL			
															29	2	1	31
Betula Maximowicziana 420323-420327	2	15	2	3	17	3	19	8	5	13	3	9	6	111	22	3	-	136
Betula nana 414758	-	-	2	3	6	2	6	4	6	8	2	6	-	45	2	2	-	49
Fraxinus excelsior 385251	-	3	-	3	12	5	14	3	15	20	3	9	3	90	2	3	-	95
Genista multibracteata	3	3	10	3	12	8	9	8	2	9	3	9	3	82	-	3	-	85
Picea Omorika 399396	-	3	1	3	10	-	14	8	8	15	3	9	3	77	2	3	-	82
Pyrus communis 418783	-	3	-	3	2	3	6	3	5	9	-	9	-	43	-	-	-	43
Rhus lancea 419221	-	3	9	3	7	3	11	3	2	9	-	9	-	59	-	-	-	59
Syringa pekinensis	3	-	2	-	8	-	6	3	5	4	-	9	-	50	2	3	-	55
Taxus baccata 399411-399412	-	3	2	3	12	8	14	8	2	12	-	9	-	73	-	3	-	76
Thuja occidentalis	-	2	-	3	7	-	6	3	7	8	-	9	-	35	2	3	-	40
																		18
TOTALS														665	32	23		720

II. NC Arboreta Cooperators

Number of Sites State	AK	IL	IN	IA	KS	MI	MN	MO	NE	ND	OH	SD	WI	NCR	TOTAL			
															13	3	11	46
Betula Maximowicziana 420323-420327	-	7	-	15	5	9	5	3	3	-	12	-	3	62				62
Fraxinus excelsior 385251	-	-	-	-	5	9	5	-	3	-	10	-	2	34				34
Genista multibracteata	-	3	-	-	5	3	5	3	3	-	12	-	-	34				34
Rhus lancea 419221	-	3	-	1	5	-	5	-	3	-	5	-	3	25				25
Taxus baccata 399411-399412	-	3	-	1	5	1	5	-	3	-	5	-	-	23				23
																		178
TOTALS																		46

III. Miscellaneous

APPENDIX I

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION-AGRICULTURE RESEARCH
NORTH CENTRAL REGIONAL PLANT INTRODUCTION STATION
IOWA STATE UNIVERSITY
AMES, IOWA 50011

NC-7 Regional Ornamental Plant Distribution List, 1979

Plant Descriptions

Betula Maximowicziana Regel, PI's 420323-420327. Monarch birch. This very handsome, vigorously growing tree can reach to 30 m. The large (15 cm) deeply cordate leaves give this birch the appearance of some lindens (Tilia). Monarch birch is highly resistant to the bronze birch borer (Agrillus anxius). The true monarch birch is a rarity in cultivation, and only a few trees are found in the U.S. and Canada. Seedlings offered were grown from seed received from the Director, Government Forest Experiment Station, Meguro, Tokyo, Japan (seed collected from Hokkaido Natural Forests, latitude 43° 13' to 52° 58'; longitude 141° 23' to 143° 59'; elevation 140 to 460 m). Plants offered are 50 to 75 cm. USDA Zone 3.

Betula nana L., PI 414758. This low spreading and much branched ornamental shrub can reach to 60 cm. The leaves are orbicular to broad-obovate, rounded or truncate at apex, 5-15 mm long, glutinous when young and slightly pubescent underneath. It has short petioles, and about 1 cm long cones. Seedlings offered were grown from seed received from Siri Horntvedt, Institute of Dendrology, Norwegian Agricultural High School, through Dr. Cecil Stushnoff, University of Minnesota. Plants offered are 25-50 cm. USDA Zone 2.

Fraxinus excelsior L., PI 385251, European ash. European ash grows to 40 m with an equal spread. Winter buds are black, foliage is dark green in summer and yellow in fall. The leaves are opposite, pinnately compound, having 7-11 leaflets of 7-12 cm length. Seedlings offered were grown from seed presented by Lav Rajevski, Biological Institute, Yugoslav Academy of Science and Arts, Dubrovnik, Yugoslavia (seed collected from Mount Velez near Nevesinje, Bosnia, and Herzegovina, elevation 650 m). Plants offered are 30-50 cm. USDA Zone 3.

Genista multibracteata, Broom. This leguminous ornamental plant has showy yellow flowers in dense, compact, terminal spikes; short, erect, glabrous pods and is adapted to sunny, dry locations. This plant is generally confused with G. tinctoria from which it differs in its more slender stems, paler leaflets, denser spikes, and the aggregation of sterile bracts at the base of inflorescence. Plants offered were propagated from plants donated to the Regional Plant Introduction Station by the Lake City Nurseries, Inc., Lake City, Minnesota. Plants offered are 30 to 40 cm, heavily pruned. Plant hardiness information not available.

Picea Omorika (Panč.) Purk, PI 399396, Serbian spruce. This evergreen conifer can grow to 30 m or more. The leaves are flattened with 2 white bands above, glossy dark green beneath, and 15-25 mm long. Serbian spruce is hardy to USDA Zone 4, but requires shelter from winter winds. Seedlings offered were grown from seed presented by Lav Rajevski, Biological Institute, Yugoslav Academy of Science and Arts, Dubrovnik, Yugoslavia (seed collected from Mount Babina Gora near Visegrad, Bosnia and Herzegovina, elevation 940 m). Plants offered are 15-25 cm. USDA Zone 4.

Pyrus communis L., PI 418783, Common pear. This long-lined broad-pyramidal pear tree can reach to 15 m, rarely to 20 m. The leaves are 2-8 cm long, elliptic to oblong-ovate, somewhat leathery, short-pointed, crenate-serrulate to subentire, turning deep purplish red to dark red in autumn. The flowers appear with first leaves and are about 3 cm across and white or tinged pale pink. Fruits mostly pear-shaped and 2.5 cm in diameter. Seedlings offered were grown from seed collected by Dr. J. O. Young, University of Nebraska, from a 12 m tall tree near Karndesh river in Afghanistan. Plants offered are 40-60 cm. USDA Zone 5.

Rhus lancea L., PI 419221. This small tree can reach to 8 m. The leaves are compound, 3 leaflets, linear-lanceolate, to 10-15 cm long, and mucronulate. Small greenish-yellow flowers, in panicles shorter than leaves, appear early spring. Seed introduced from S. Africa. Plants offered are 50-90 cm. Plant hardiness information not available.

Syringa pekinensis Rupr. This large shrub with slender spreading branches can grow to 5 m. The leaves are quite glabrous, ovate to ovate-lanceolate, dark green above and grayish green beneath, scarcely veined, 5-10 cm long and 2 - 3.5 cm broad. The yellowish-white flowers appear in large glabrous 15 cm long panicles. Plants offered were donated by Dr. Dale Herman, North Dakota State University, and are 30-60 cm long. USDA Zone 4.

Taxus baccata L., PI's 399411-399412, English yew. This densely branched ornamental tree can grow to 20 m or more. The winter buds are obtuse and the scales persistent at the base of branches. The leaves are 1 - 2.5 cm long, abruptly narrowed into a very short greenish petiole, dark green and lustrous above and with 2 pale green bands below. Seedlings offered were grown from seed presented by Lav Rajevski, Biological Institute, Yugoslav Academy of Science and Arts, Dubrovnik, Yugoslavia. Plants offered are 15-25 cm. Plant hardiness information not available.

Thuja occidentalis L., American arbovitae. These ornamental arbovitae plants were propagated from cuttings taken from a plant (source not known) growing at the Plant Introduction Farm, Ames, Iowa. At age 14 years, this plant has just attained an approximate height and spread of 1 m. The parent plant is slow growing, very dense, and has a perfect globe shaped form without any shearing/pruning. This plant should be ideal for carefree landscaping. Plants offered are 30-40 cm. Plant hardiness information not available.